

Quantitative assessment of *S. mutans* and *C. albicans* in patients with Haas and Hyrax expanders

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Objective: To assess and compare the number of *Streptococcus mutans* and *Candida albicans* colonies in patients with Haas and Hyrax appliances before and after insertion.

Methods: The sample consisted of 84 patients requiring orthodontic treatment. For all patients a midpalatal suture expansion was indicated. Patients were randomly divided into Group HA, who used the Haas appliance (n = 42) and Group HY, who used the Hyrax appliance (n = 42). Initially and thirty days after appliance insertion all patients were submitted to saliva collections. The saliva was diluted followed by seeding in Mitis Salivarius and CHROMagar media, for growth of *S. Mutans* and *C. Albicans* respectively.

Results: Results showed statistically significant difference between groups HA and HY for *Streptococcus mutans* and *Candida albicans* ($p < 0.05$). Haas appliance promoted greater *S. mutans* and *C. albicans* proliferation when compared to Hyrax appliance.

Conclusion: The Haas appliance favored greater proliferation of *S. mutans* and *C. albicans* when compared with the Hyrax appliance. Insertion of the appliances resulted in greater buildup of microorganisms.

Keywords: Orthodontics. Orthodontic appliances. Streptococcus mutans. Candida albicans. Palatal expansion technique.

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How to cite this article: Pithon MM, Santos RL, Alviano WS, Ruellas ACO, Araújo MTS. Quantitative assessment of *S. mutans* and *C. albicans* in patients with Haas and Hyrax expanders. Dental Press J Orthod. 2012 May-June;17(3):21-2.

Submitted: November 10, 2008 - **Revised and accepted:** June 16, 2009

» The authors report no commercial, proprietary, or financial interest in the products or companies described in this article.

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Editor's abstract

Maxillary expansion presents itself as one of the most common procedures in orthodontic practice, indicated for correction of posterior crossbite and maxillary transverse deficiency. This procedure was proposed by Hass, in 1961, by means of a dental-mucous-supported appliance with an acrylic resin component in intimate contact with the patient's palate. Due to difficulty in hygiene and biofilm accumulation in this region, Biederman developed the Hyrax appliance, quite similar to Hass appliance, however with dental support only. Presumably, there would be lesser biofilm build-up using the Hyrax expander when compared to the Hass expander. With this purpose, this study aimed to compare the number of colonies of *Candida albicans* (microorganisms primarily associated with buccal candidiasis) and *Streptococcus mutans* (directly related to dental caries incidence) in patients undergoing maxillary expansion with Hyrax or Haas appliances.

The sample consisted of 84 patients with ages ranging from 13 years and 04 months to 15 years and 09 months, divided into two groups with 42 patients each, depending on the use of Hass or Hyrax appliances. Collection of 300 ml of saliva from each patient was performed before and 30 days after inserting maxillary expanders. After proper dilutions and incubation period, the counting of the number of colonies of *S. mutans* and *C. albicans* yeast was performed multiplying the number of colonies by the dilution factor. The data was subjected to analysis of variance (ANOVA) and subsequently to the multiple comparison Tukey test. The results showed a greater number of colonies of *S. mutans* and *C. albicans* in patients who used the Hass expander in comparison to the Hyrax expander ($p < 0.001$ and $p < 0.000$, respectively). The authors concluded that after insertion of Hass and Hyrax expanders, there was a statistically significant increase of *S. mutans* and *C. albicans*, with greater proliferation of these microorganisms in patients using Haas appliance.